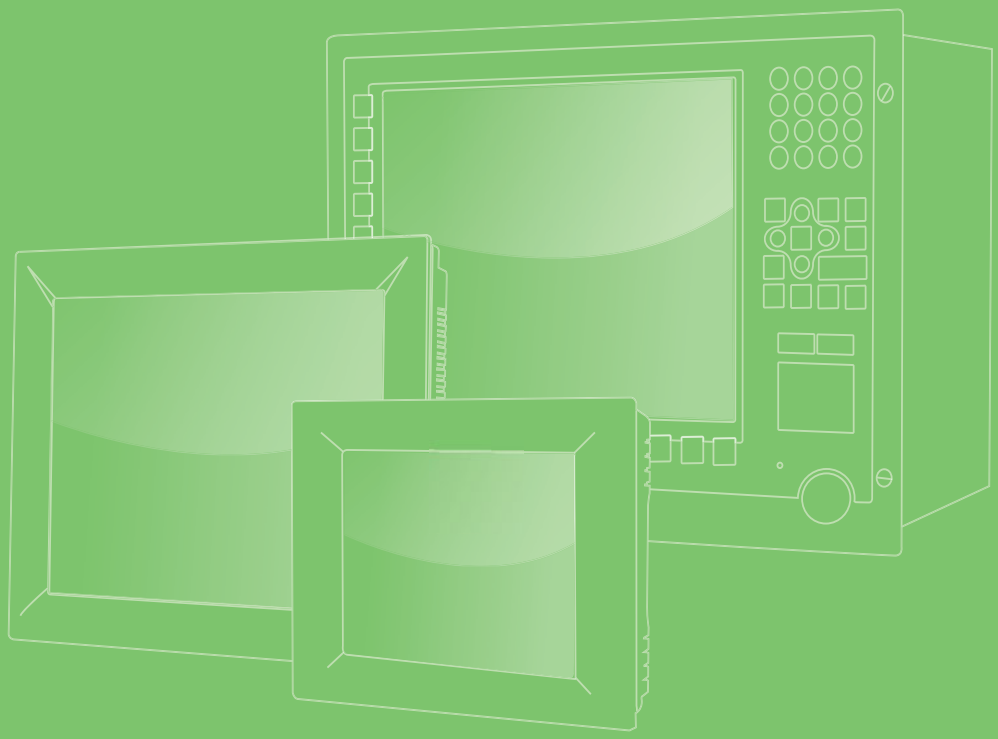

User Manual

PPC-4150W

Intel® Atom D2550 processor based microcomputer, with 15.6" color TFT LCD display

ADVANTECH

Enabling an Intelligent Planet

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Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Part No. 200K415020 Edition 1

Printed in China October 2013

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class B

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Technical Support and Assistance

1. Visit the Advantech web site at http://support.advantech.com where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well, or you cannot get it to work according to the user's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
16. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

Battery Information

Batteries, battery packs and accumulators should not be disposed of as unsorted household waste. Please use the public collection system to return, recycle, or treat them in compliance with the local regulations.

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Chapter 1

General Information

This chapter gives background information on PPC-4150W panel PC.

Sections include:

- **Introduction**
- **Specifications**
- **Dimensions**

1.1 Introduction

Advantech PPC-4150W are Intel Atom processor based panel PCs with 15.6" color LCD. Powerful D2550 and Intel NM10 chipset not only meet with most application requirements, but also ensure the operation reliability under all environments. Built-in Mini SATA interface can be used as backup HDD solution for OS bootup; Mini PCIe card interface supports various expansion cards (e.g. wireless LAN) to increase the device mobility. For safety consideration, PPC-4150W provides 2 Giga LAN configuration. In addition, 4 serial ports and 5 USB V2.0 interfaces make the product suit for all kinds of advanced applications.

1.2 Specifications

1.2.1 Specification Comparison

Product	PPC-4150W
LCD Specification	15.6'' LCD
Display Type	15.6" TFT LCD (LED backlight)
Max. Resolution	1366 x 768
Color	16.7M
dot matrix	252 (per one triad) x 252 um
Viewing Angle	85 (left), 85 (right), 80 (top), 60 (bottom) (Typ.)
Brightness	300 cd/d2 (Typ.)
Contrast	500 (Typ.)
LCD Operation Temperature	0 ~ 60° C (32 ~ 140° F)
Backlight Lifecycle	50, 000 hours
Weight	5.46 Kg (12.04 lb)
Dimensions	419.7 x 269 x 59 (mm) (16.52" x 10.59" x 2.32")

1.2.2 General Specifications

CPU	D2550 1.86G 1M
Chipset	Intel Atom D2550 + NM10
Memory	One 204 pin slot, up to 4 G DDR3 SDRAM
Storage	Support one 2.5" SATA HDD
Network(LAN1, LAN2)	2 x Gigabit Ethernet ports
I/O Ports	4 x COM port: 1 x RS-232/422/485; 3 x RS232 5 x USB2.0 2 x Gigabit Ethernet ports 1 x VGA port, 1 x DIO port 1 x Line-out port,1 x Mic-in port, 2 x 1 W speaker (built-in) 1 x Phoenix power port, 1 x Power switch
Expansion Slot	1 x PCIe x1 (standard) 1 x PCI (in the accessory box)
Additional Expansion Slot	1 x Mini PCIe long card slot and 1 x mSATA card slot
System	Win XPE / WES 7 / WIN CE 7.0 / Linux

1.2.3 Power Specifications

Power (D2550-NM10)	36 W (test system: Windows7 32bit)
	33 W (test system: Windows XP 32bit)
Output Voltage	12 - 30 Vdc, 5 ~ 2 A

Note! *The above test conditions are detailed in Note 1.*

1.2.4 Touchscreen Specifications

Type	4-wire projective captive touchscreen (multi-touch function is only supported in Win 7 or WES 7P OS)
Light Transmission	88%+/-5%
Controller	USB interface

1.2.5 Environment Specifications

Operation Temperature	0 ~ 50° C (32 ~ 122° F)
Storage Temperature	-20 ~ 60° C (-4 ~ 140° F)
Relative Temperature	10 ~ 95% @ 40° C (non-condensing)
Shock	10 G peak acceleration (11 msec duration)
Vibration	5 ~ 500 Hz 1 G RMS

1.2.6 Certification Specifications

EMC	BSMI, CE, FCC Class B
Safety	CB, CCC, UL

1.2.7 IP

Front Panel IP Grade	IP65

Note 1:

PPC-4150W's power test conditions are as follows:

Test Software	**Test Configuration**	**Test System**
Burn-in 7.0	Memory: Transcend DDR3 1333 SODIMM 4 GB x 1 HDD: Seageat 500G 2.5” SATA II IO: COM Port RS232 loopback x4, USB2.0 device x3, USB mouse x1	Windows 7 32bit
		Windows XP 32bit

1.3 Dimensions

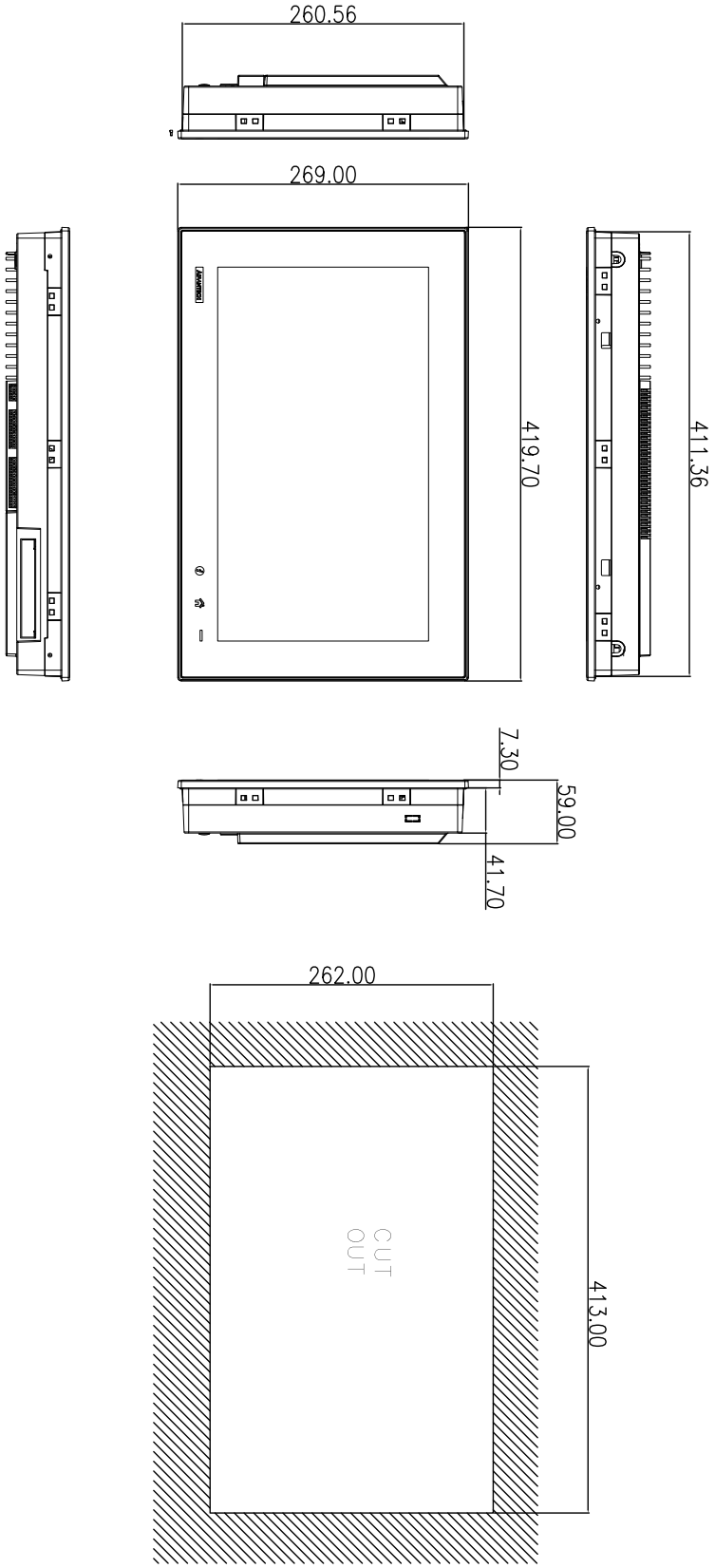


Figure 1.1 PPC-4150W dimensions

Note! *Supports VESA 100 x 100 mm; please use M4 screw, 6 mm depth (maximum). Use suitable mounting apparatus to avoid risk of injury.*

Chapter 2

System Installation & Setup

Sections include:

- Quick Installation Guide
- Inslation Procedures
- Install Memory
- Install HDD
- Install Mini SATA
- Install Wireless LAN
- Install Expansion Card
- AT/ATX Function Switch
- Grounding Installation
- Hook Installation
- Independent Quick Installation

2.1 Quick Start Guide

Before you start to set up the panel PC, take a moment to become familiar with the locations and purposes of the controls, drives, connectors and ports, which are illustrated in the figures below.

When you place the panel PC upright on the desktop, its front panel appears as shown in Figure 2.1.

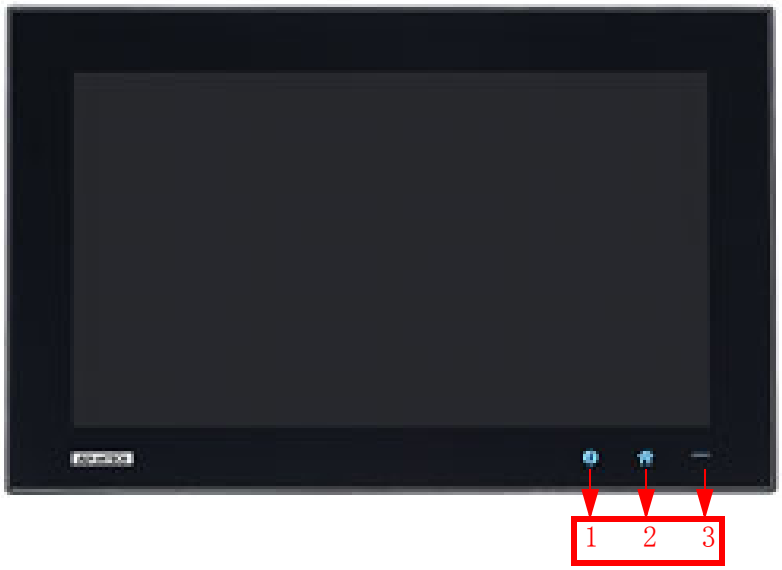


Figure 2.1 Front panel

1. I Key
2. Home Key
3. Power status indicator, off (S5): orange, on (S0): blue

Figure 2.2 Side view

1. Quick installation clip
2. Antenna hole (two)
3. Panel Mount Bracket holes (ten)
4. Side USB 2.0 interface
5. CPU cooler

I/O interfaces:

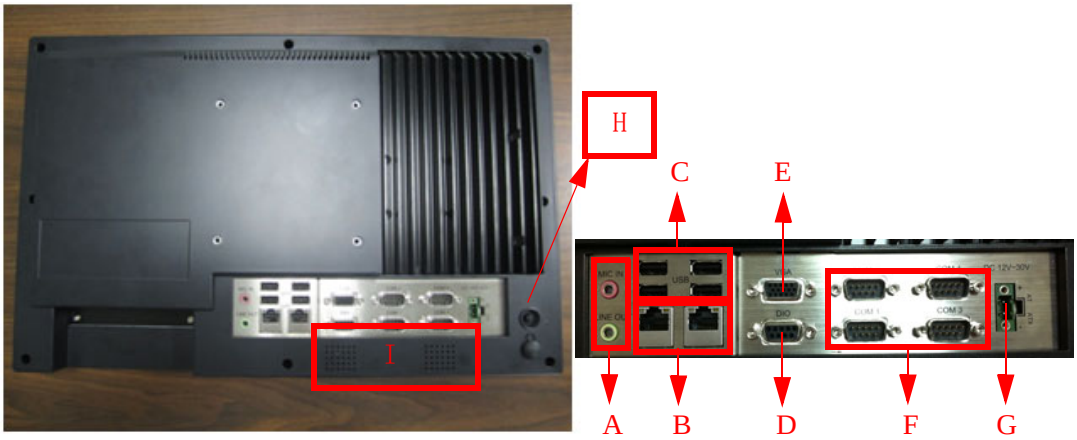


Figure 2.3 Location of I/O interfaces

A: Line out/Mic in
B: 2 x Giga Ethernet ports
C: 4 x USB 2.0
D: DIO
E: VGA
F: COM 1, 3, 4 ports, COM2 RS232/422/485 port
G: DC power port (12 - 30 V)
H: Power button
I: Speaker
J: Grounding screw (refer to Fig 2.4)
K: PCI/PCIE x1 Expansion slot (refer to Fig 2.5)

Figure 2.4 Grounding screw

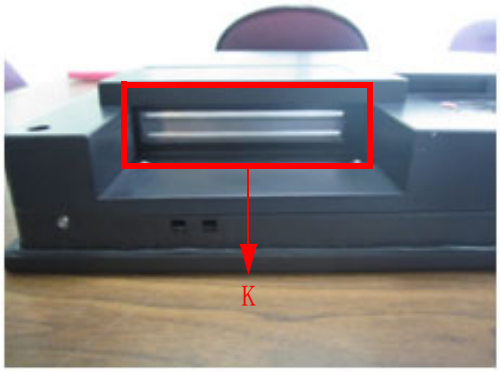


Figure 2.5 PCI expansion slot

2.2 Installation Procedures

2.2.1 Connect Power Cable

The panel PC has DC power socket (12 ~ 30 V). When connecting the power cable, please hold the plug end. Please follow the procedures below:

1. Connect the female end of the power cable to panel PC's DC socket.
2. Connect the male end of the power cable to power outlet.

Figure 2.6 Connect power cable

2.2.2 Connect Keyboard and Mouse

Connect the keyboard and mouse to panel PC's I/O interfaces.

2.2.2.1 Power ON

The power button is located in the right bottom side of the panel PC.

Note! *Power cable and adapter are optional.*

2.3 Install Memory Card

1. Loosen the screws as indicated in the red circle. (See Fig 2.6)
2. Press the red area pull out the card holder (See Fig 2.8 ~ 2.10) and open the rear cover.

Figure 2.7

Figure 2.8

Figure 2.9

Figure 2.10

3. Remove the screws as indicated in the red circle. (See Fig 2.11), and take out the CPU cooler.

Note! *The black and grey lumps as indicated in the red circle of Fig 2.12 are cooler pads, which must be removed by professional personnels to avoid improper use.*

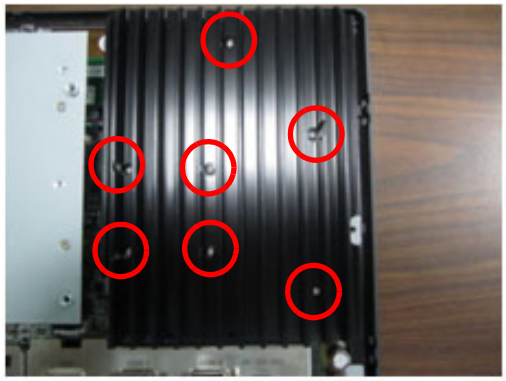


Figure 2.11

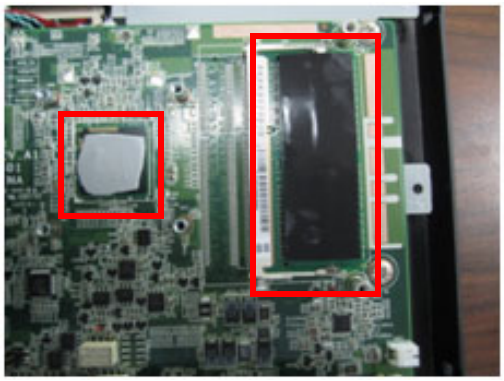


Figure 2.12

Note! *CPU cooler pad surface is isolated by anodization treatment to avoid static electricity (CPU contact side excluded).*

2.4 Install HDD

1. Please follow the procedures in Section 2.3 to open the rear cover and remove the screws as indicated in the red circles in Fig 2.13.
2. Take down the HDD bracket from the reinforced board. (See Fig 2.14)
3. Install the HDD (see Fig 2.15), and take out the 4 screws from the accessory box to fix the HDD.
4. Lock the HDD bracket, and take out the HDD cable from the accessory box and connect it to the mainboard. (See Fig 2.16 ~ 2.18)

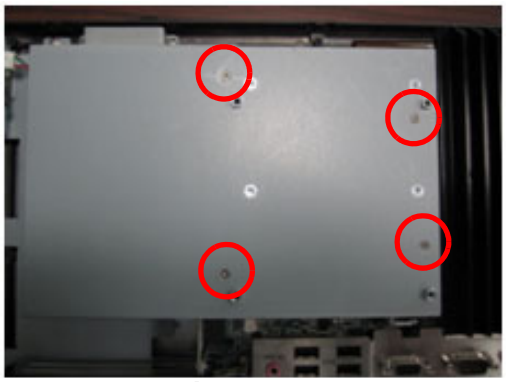


Figure 2.13

Figure 2.14

Figure 2.15

Figure 2.16

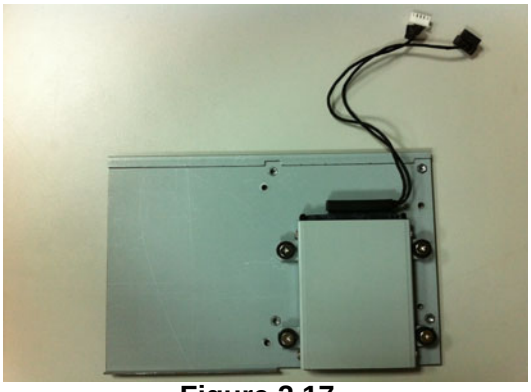


Figure 2.17

Figure 2.18

2.5 Install Mini SATA

1. Please follow the procedures in Section 2.3 and 2.4 to open the rear cover and reinforced board. (See Fig 2.19)
2. Plug the MiniSATA into the mainboard interface, and take out the 2 M2.5x4 screws from the accessory box to fix it.
3. Return the rear cover and reinforced board.

Figure 2.19

Figure 2.20

2.6 Install Wireless LAN Card

1. Please follow the procedures in Section 2.3 and 2.4 to open the rear cover and reinforced board. The wirless LAN card can be installed to the locations as indicated in Fig 2.21 and 2.22; for the wireless short card, you need to take out one hexagonal screw from the accessory box to fix it.

Figure 2.21

Figure 2.22

2. Take down the antenna bracket in the left top and right top corners of the machine. (See Fig 2.23)
3. Connect the wireless LAN card module cable to the antenna bracket, please note the installation direction of cable end and screws/cushions. (See Fig 2.24)
4. Lock the bracket, and connect the cable to the wireless LAN card. (See Fig 2.25)
5. Take down the two plugs in the left and right sides of the rear cover. (See Fig 2.26)
6. Return the rear cover and install the antenna of the wireless LAN card module. (See Fig 2.27)

Note! *For wireless LAN card module, you can choose Advantech Product: (Part No. PPC-6150-WLANE).*

Figure 2.23

Figure 2.24

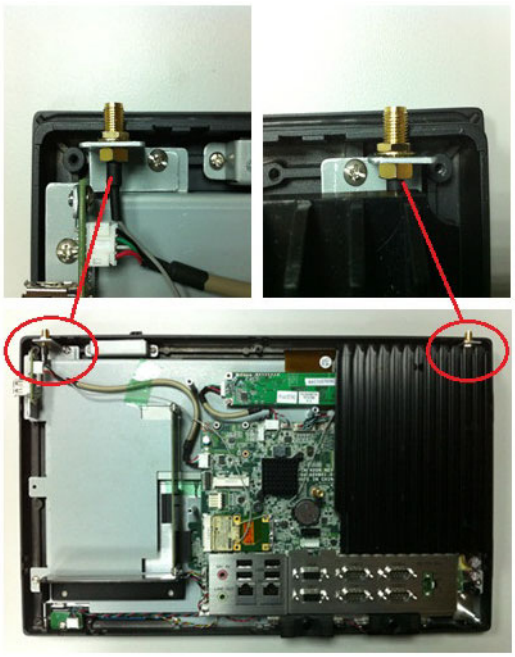


Figure 2.25

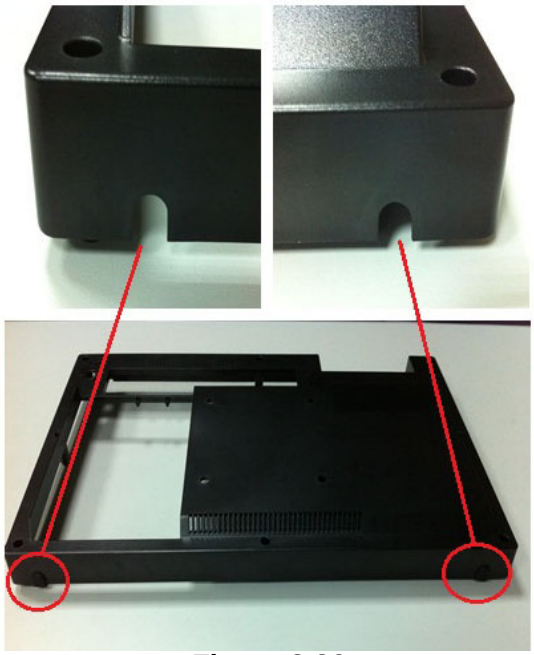


Figure 2.26

Figure 2.27

2.7 Install the Riser Card

1. Remove the rear cover of the Panel PC. Then remove the screws and shield as indicated in the red circle in Fig 2.28 and install the expansion card.
2. The original machine provides PCIE riser card (PCM-939) (see Fig 2.29), and PCI riser card (PCM-938) is provided in the accessory box for additional use (See Fig 2.30).
3. The installation of expansion card is shown as Fig 2.31 and Fig 2.32.

Note! *The maximum dimension of the expansion card is 167.65 mm x 106.7 mm.*

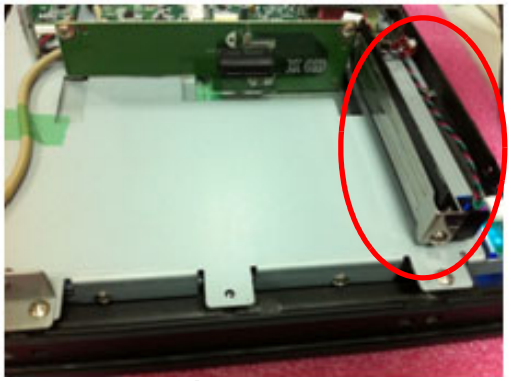


Figure 2.28

Figure 2.29

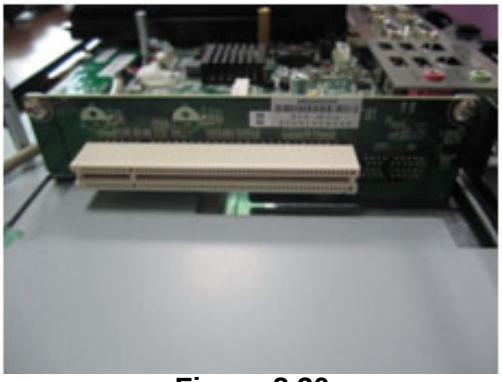


Figure 2.30

Figure 2.31

Figure 2.32

2.8 AT/ATX Function Switch

Switch is built in the machine, by which you can choose AT/ATX function without removing the rear cover.

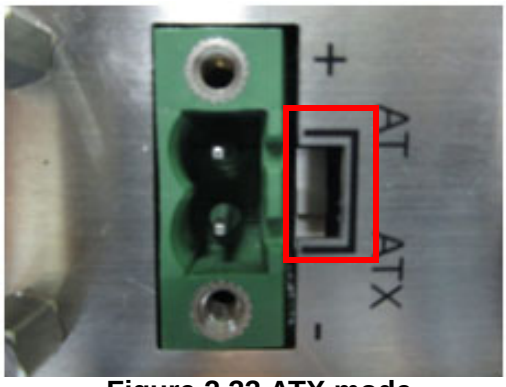


Figure 2.33 ATX mode

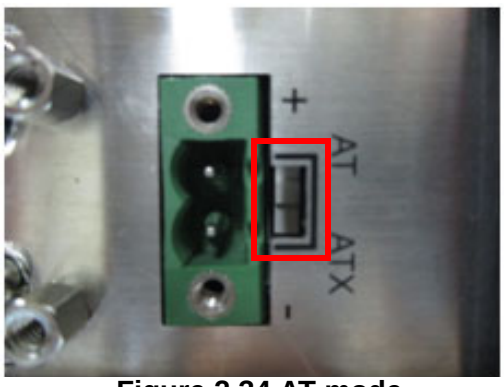


Figure 2.34 AT mode

2.9 Grounding Installation

Loosen the screws, take down the plastic cover, plug in the grounding cable, and then fix the screws. (See Fig 2.35 ~ Fig 2.38)

Figure 2.35

Figure 2.36

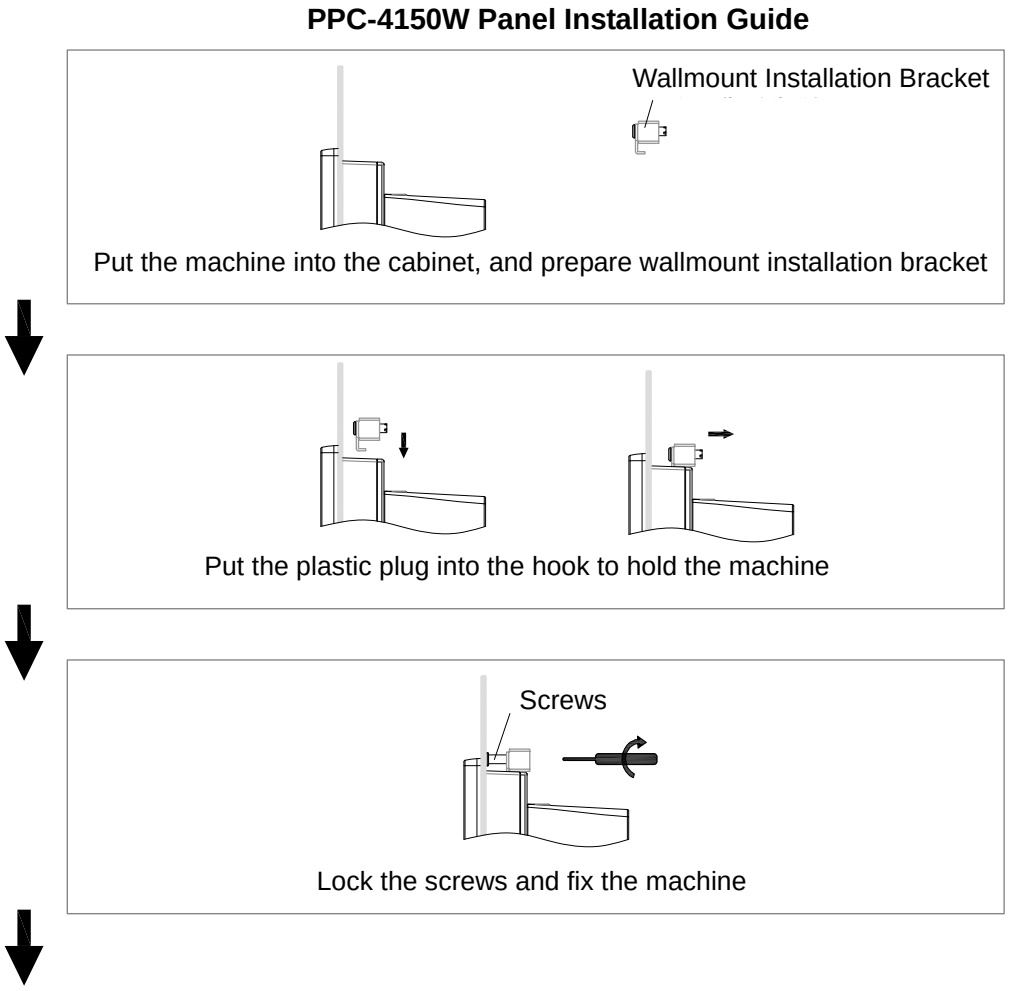
Figure 2.37

Figure 2.38

Note! *The grounding cable is not provided in the accessory box.*

2.10 Hook Installation

Please follow the figure below:


PPC-4150W Panel Installation Guide
Wallmount Installation Bracket
Put the machine into the cabinet, and prepare wallmount installation bracket
Put the plastic plug into the hook to hold the machine
Screws
Lock the screws and fix the machine

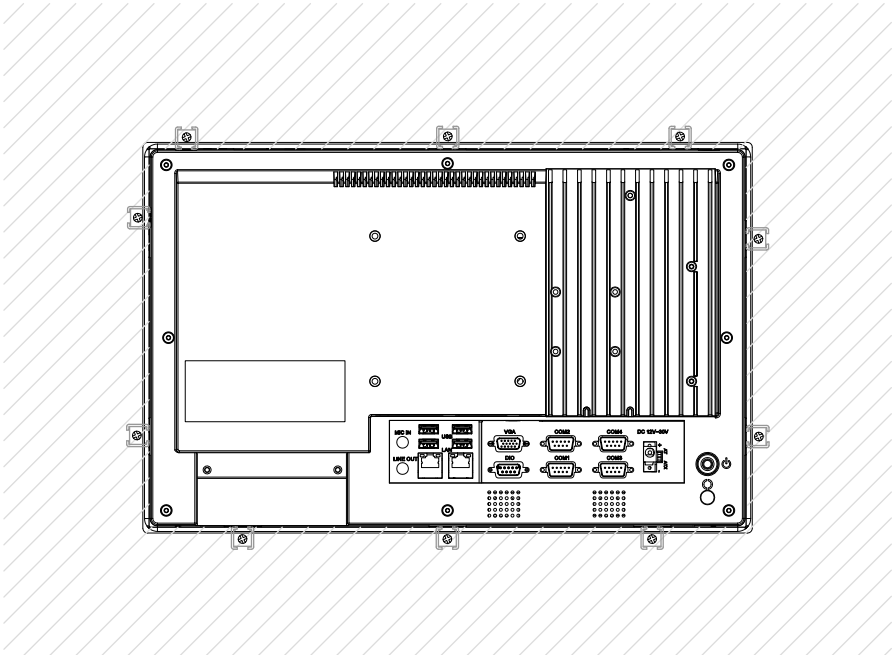
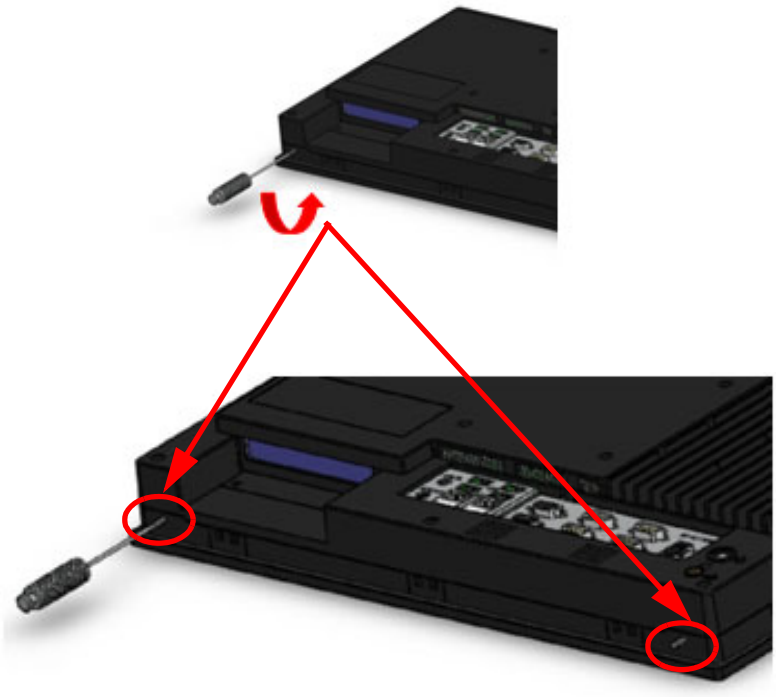


Figure 2.39 Hook Installation

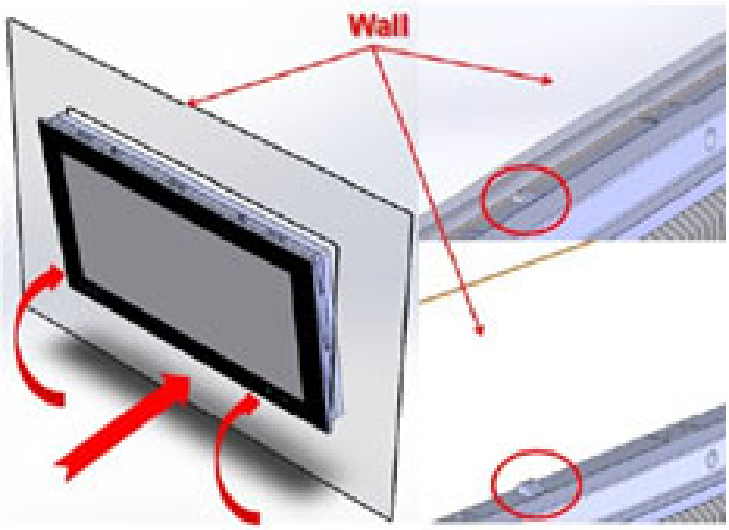
2.11 Independent Quick Installation

Users can independently complete the panel wallmount installation by quick installation Guide. Please follow the procedures below:

1. Loosen the two screws at the bottom side, see the figure below.



2. Push the machine into the opened wall gap, the spring hook will lock the machine into the wall.



3. Wallmount installation completes as shown in the figure below. Then in the rear side of the machine, lock the hook screw and fix the machine according to Section 2.10 “Hook Installation”.

Note! *It is recommend that the mount thickness is smaller than 2 mm (0.079”) according to quick installation guide. For other situations, the recommended thickness is less than 6 mm (0.236”).*

2.12 Cradle Installation Description

Note! *For the cradle, you can choose Advantech product (Part No. PPC-4150W-STANDE). Please refer to the included description for the installation method.*

Chapter 3

Jumper Configuration

Sections include:

- **Jumper & Connectors**
- **Peripheral COM Port & DIO Switch and Pin Definitions**

3.1 Jumper & Connectors

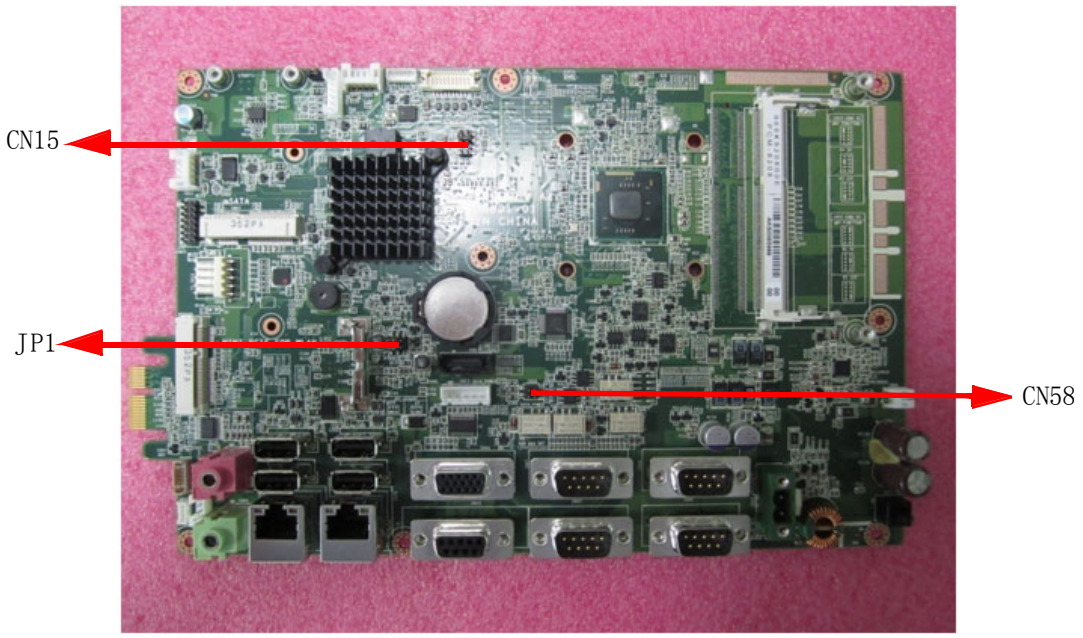
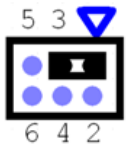


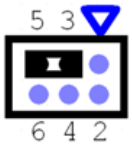
Figure 3.1 PCM-8208 front view

Interface	Function
JP1	Clear CMOS
CN58	RS422 120 ohm resistor selection (COM2)

JP1	Image	Clear CMOS
(1-3)	P3	Clear CMOS
(3-5)	P4	Clear CMOS (Default)

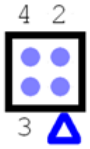


P3



P4

CN58	Image	RS422 120 ohm resistor selection (COM2)
(1-2)	P5	Break 120 ohm resistor
(3-4)	P6	Add 120 ohm resistor



P5

P6

3.2 External COM PORT & DIO Switch and PIN Definition

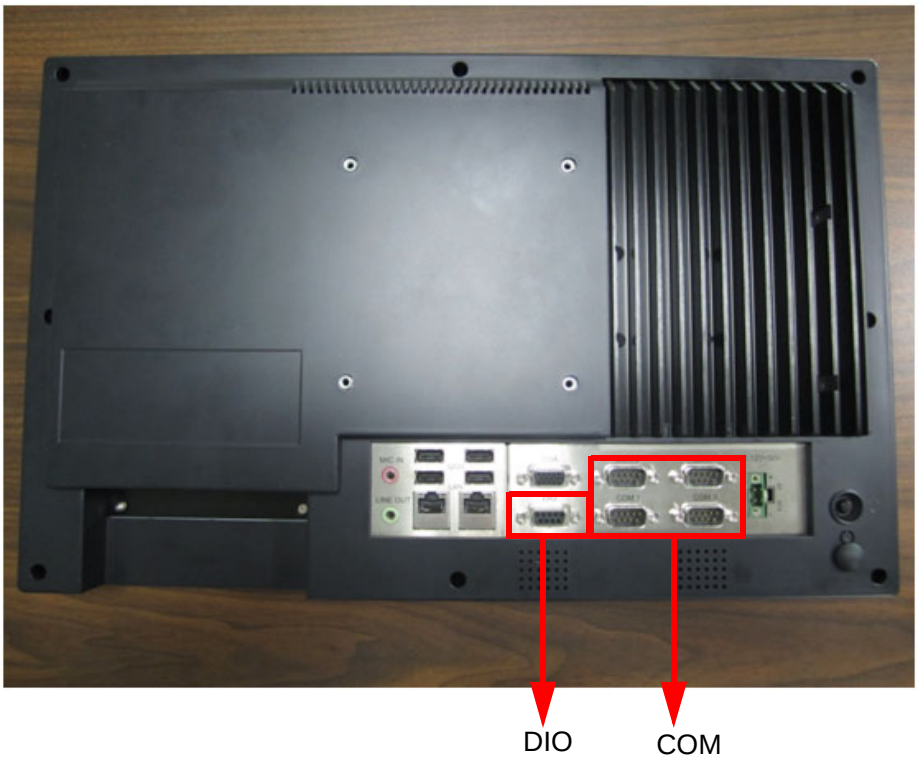


Figure 3.2 COM ports

COM1 (RS232, pin9 supports 5 V/12 V output)
COM2 (RS232/422/485, pin9 supports 5 V/12 V output)
COM3 (RS232)
COM4 (RS232)

COM1:

Pin9 is set as RI signal in COM port by default, and selected as charged pins by BIOS (5 V/12 V) (see Section 4.2.4), which can be used by the peripherals.

Voltage (V)	Maximum (A)
5 V +/-10%	0.5
12 V +/-10%	0.25

COM2:

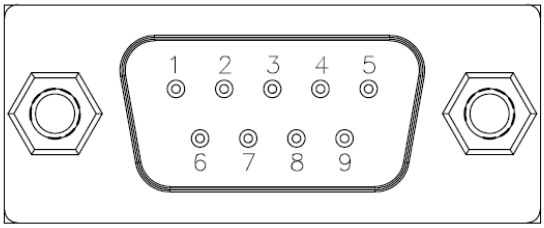
The operation mode can be either RS232/422/485, selected by BIOS. (For details, please refer to "COM2 Mode Selection" in "BIOS Configuration" chapter. Pin9 can be charged as COM1.

DIO:

Operation voltage 5 V.
8 bit parallel input and output port.
Control signal is SMBUS.

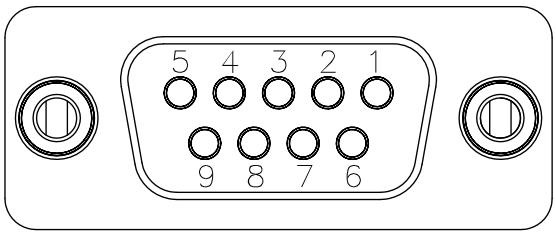
COM Port Pin Definition

Port	Function		
Pin	RS232	RS422	RS485
1	DCD	422_TXD-	485_Data-
2	RXD	422_TXD+	485_Data+
3	TXD	422_TXD+	
4	DTR	422_TXD-	
5	GND	GND	
6	DSR		
7	RTS		
8	CTS		
9	RIC		



DIO Pin Definition

Port	Function
Pin	DIO
1	GPIO0
2	GPIO1
3	GPIO2
4	GPIO3
5	GND
6	GPIO4
7	GPIO5
8	GPIO6
9	GPIO7



Chapter 4

Software Configuration

Sections include:

- **Install Drivers**
- **BIOS Setup Program**

4.1 Install Divers

When first using the system, users need to set up corresponding drivers, in order to ensure all functions are normal. Please take out the CD-ROM from the accessory box and open it in the system, the below folder will be shown:

Figure 4.1 Divers in the CD-ROM

Windows 7: All drivers needed to install for Windows 7.

Windows XP: All drivers needed to install for Windows XP.

PPC HotKeyUtility: The utility for front bezel i Key and Home Key. For the specific operation method, please refer to the “User Manual” folder.

User manual: E-record of the user manual for this machine.

Please follow the instructions to install the drivers. The drivers in the accompanied CD-ROM may not be the latest version, if needed, please find it at:

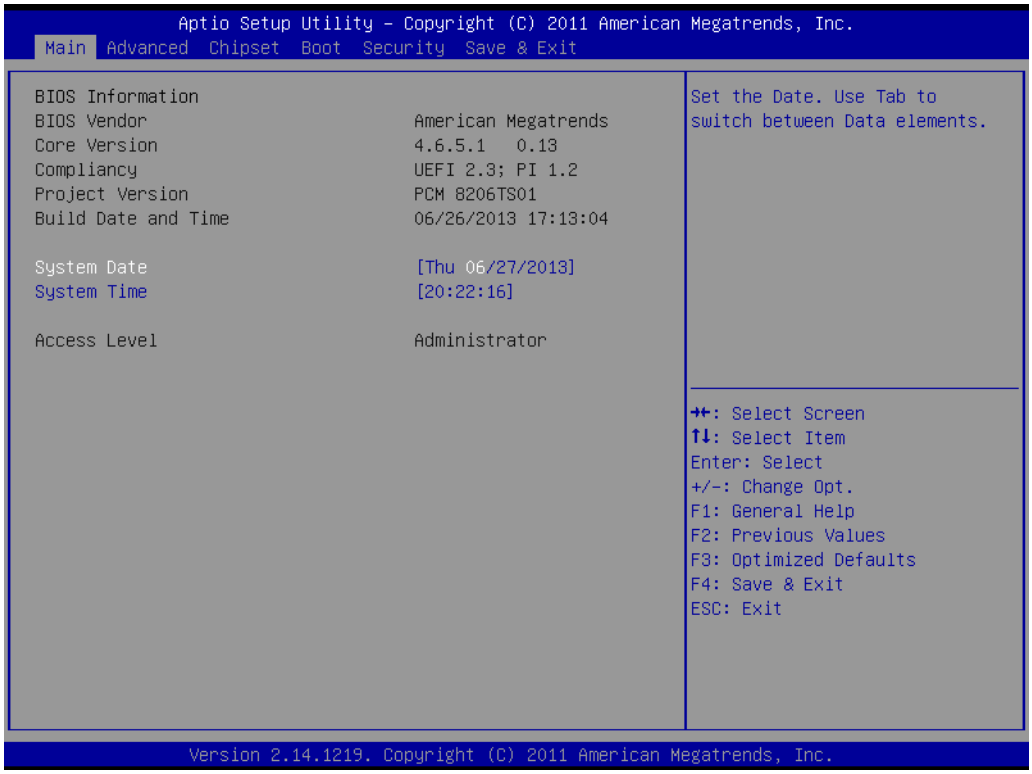
http://www.advantech.com/

4.2 BIOS Setup

4.2.1 Enter BIOS

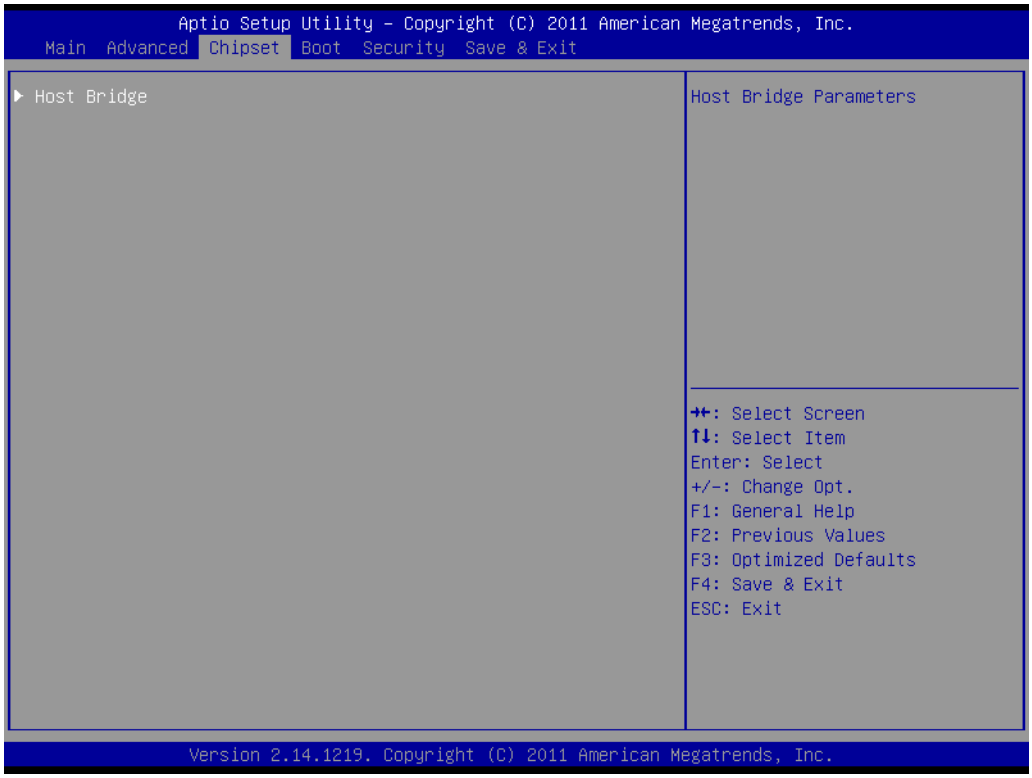
Start the computer and press "Delete" key to enter BIOS.

Press "F4" to save and exit after any configuration, or the configuration won't be saved in BIOS.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
BIOS Information
BIOS Vendor American Megatrends
Core Version 4.6.5.1 0.13
Compliancy UEFI 2.3; PI 1.2
Project Version PCM 8206TS01
Build Date and Time 06/26/2013 17:13:04
System Date [Thu 06/27/2013]
System Time [20:22:16]
Access Level Administrator
Set the Date. Use Tab to switch between Data elements.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

4.2.2 Display Brightness Adjustment

1. Select “Host Bridge” under “Chipset”.

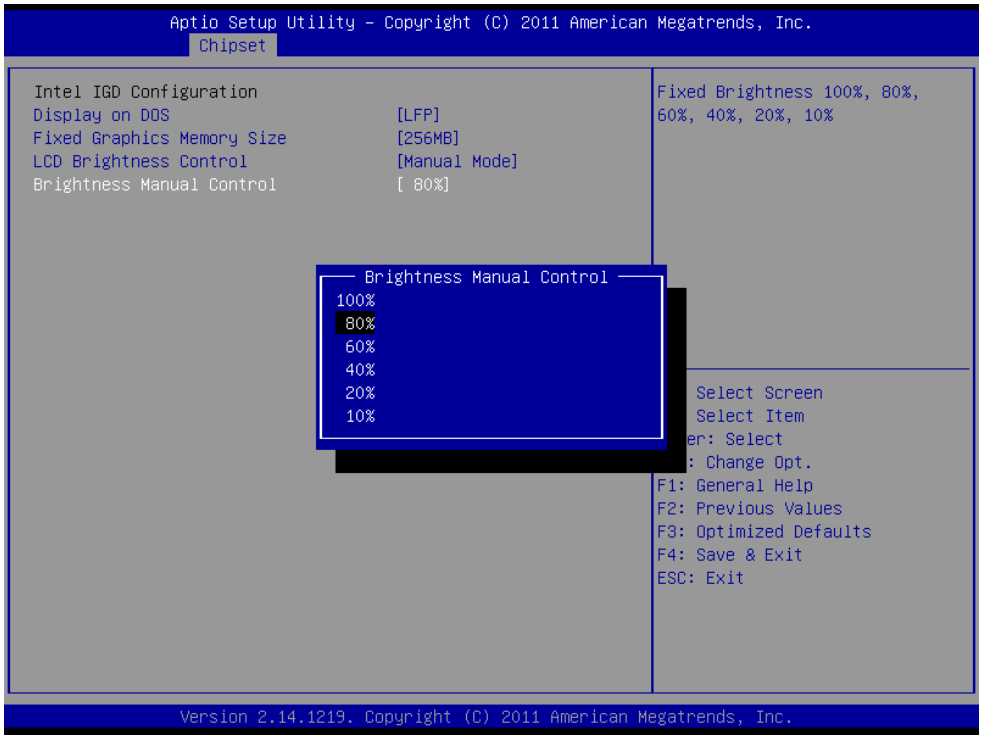

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Host Bridge
Host Bridge Parameters
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

2. Then select “Intel IGD Configuration”.

3. Manual Adjustment Mode

"LCD Brightness Control" is configured as "Manual Mode" by default.

Select "Brightness Manual Control" under "Brightness Control", and there will be 6 options:

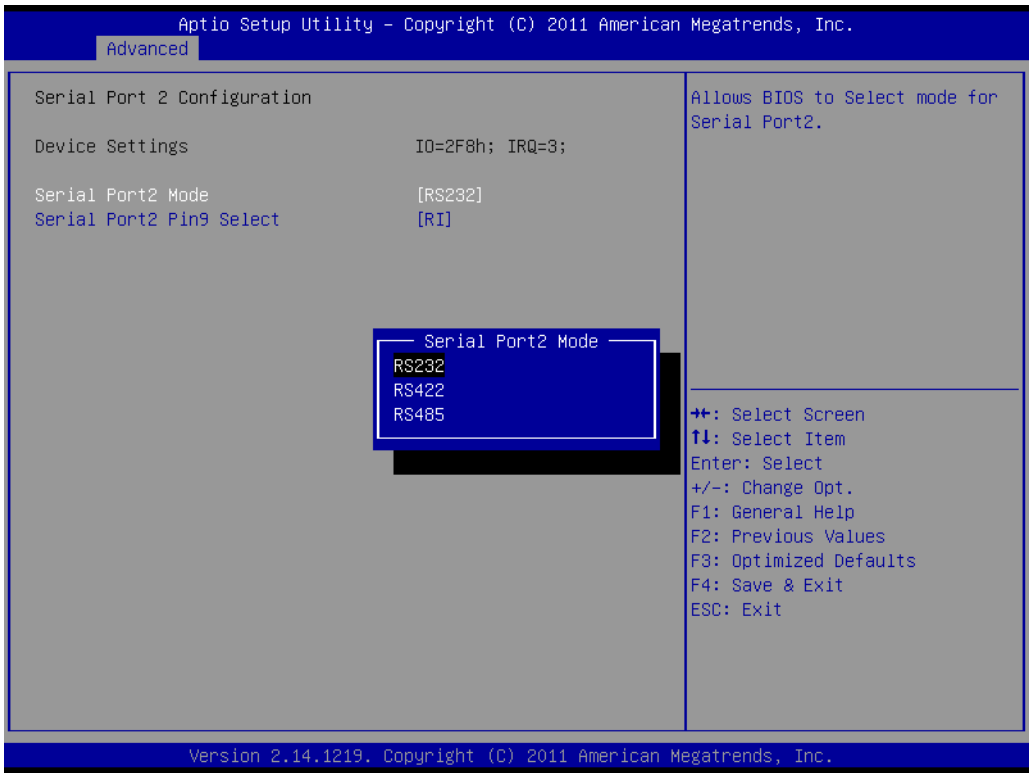


Note! *If you want to adjust brightness through AP in the OS, it will keep AP configuration mainly, and BIOS configuration will not be saved.*

4.2.3 COM2 Mode Selection (RS232/422/485)

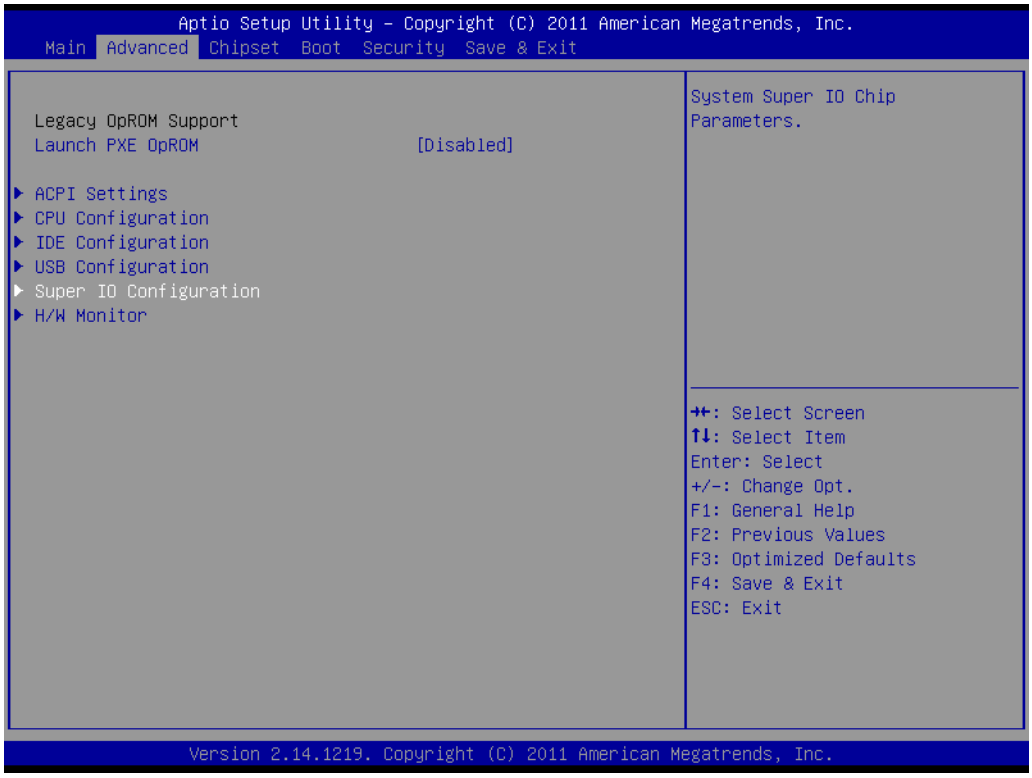
1. Select “Super IO Configuration” under “Advanced”.

2. Select “Serial Port 2 Configuration” and then select the operation mode of COM2 by "Serial Port2 Mode".

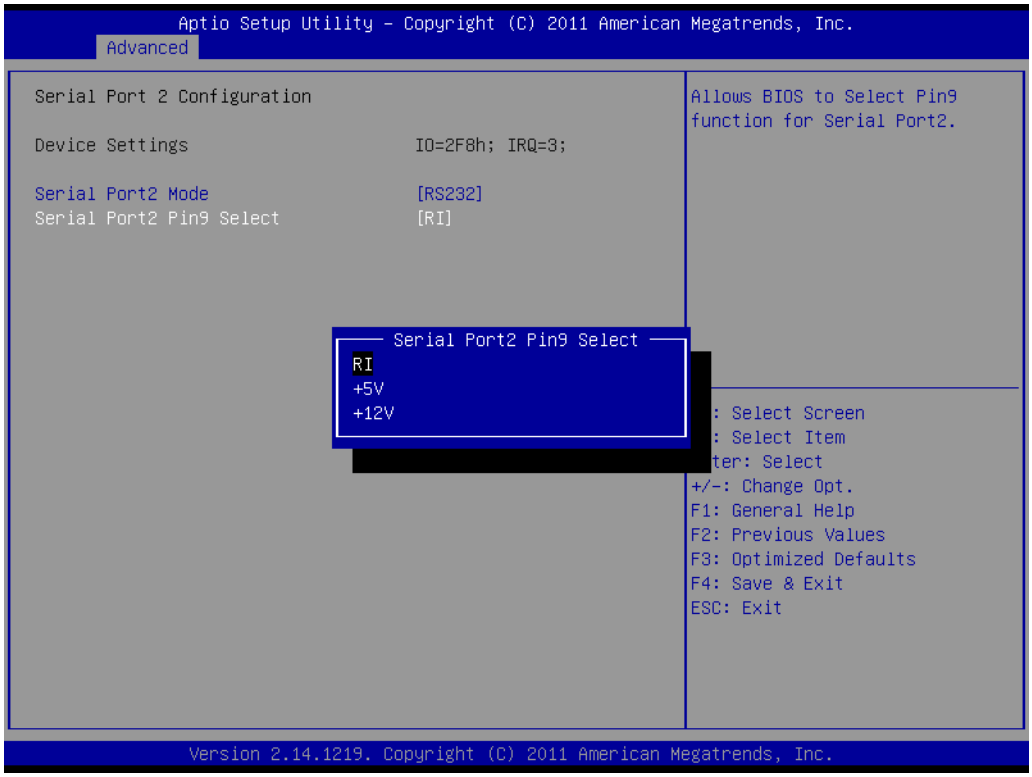


4.2.4 COM1 & COM2 Pin9 Function Selection

1. Select “Super IO Configuration” under “Advanced”.

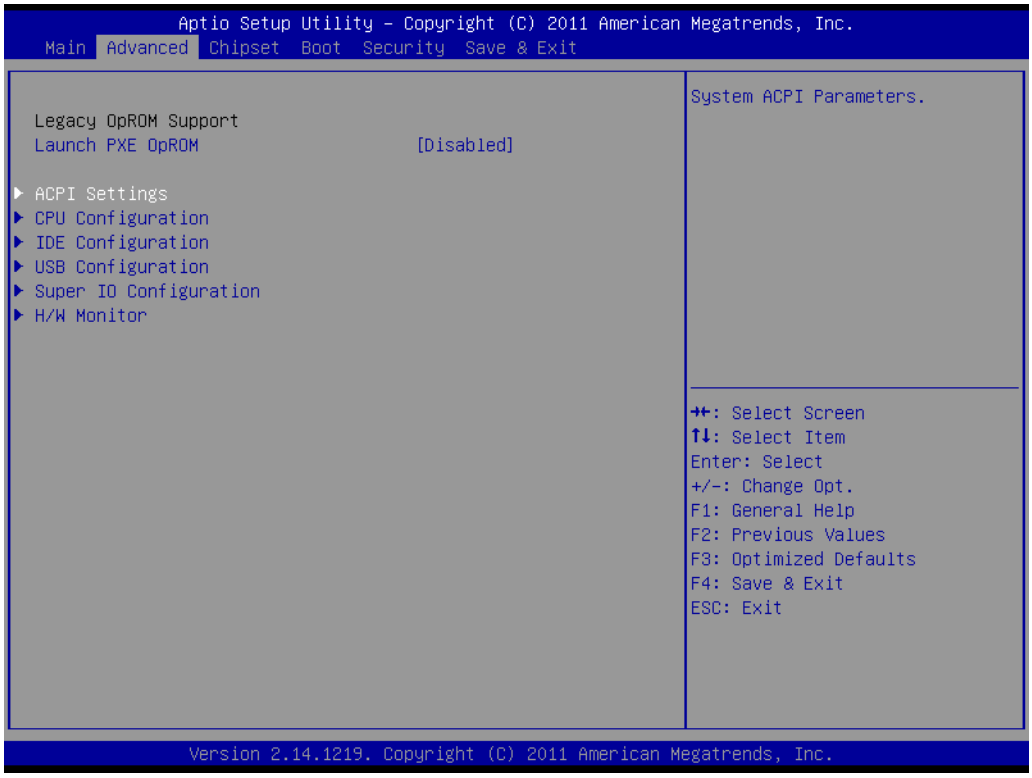


2. Select the needed COM port (serial Port 1/2 Configuration), then select Pin9 function by “Serial Port1/2 Pin9 Select”.

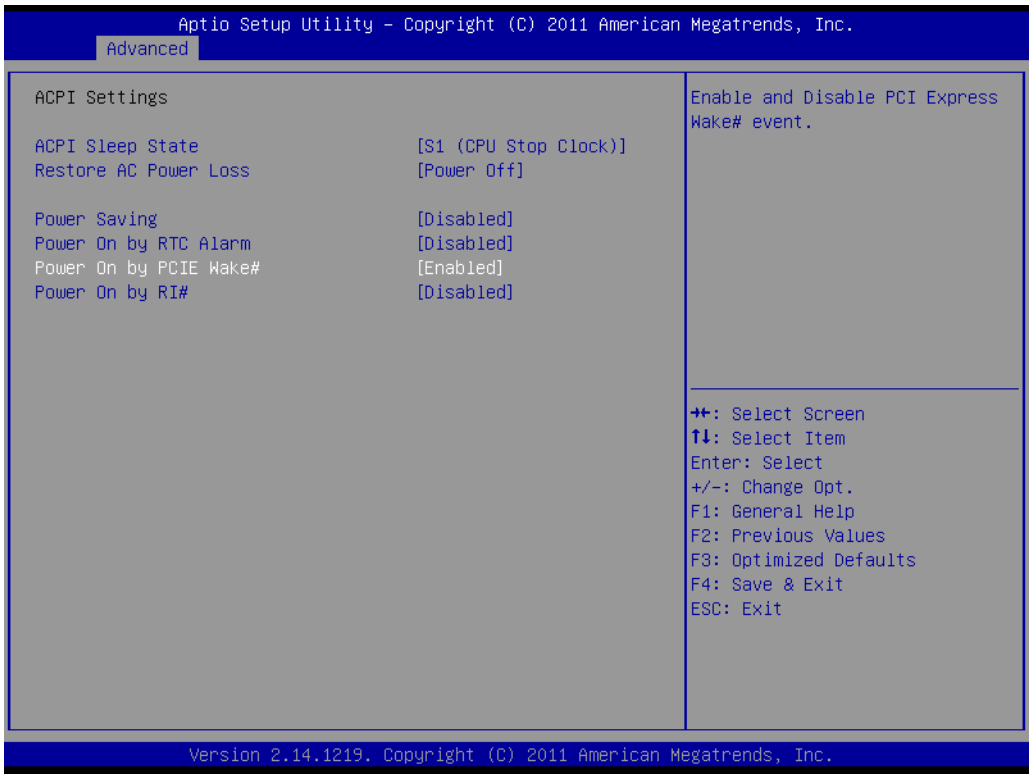


4.2.5 Wake Up by LAN

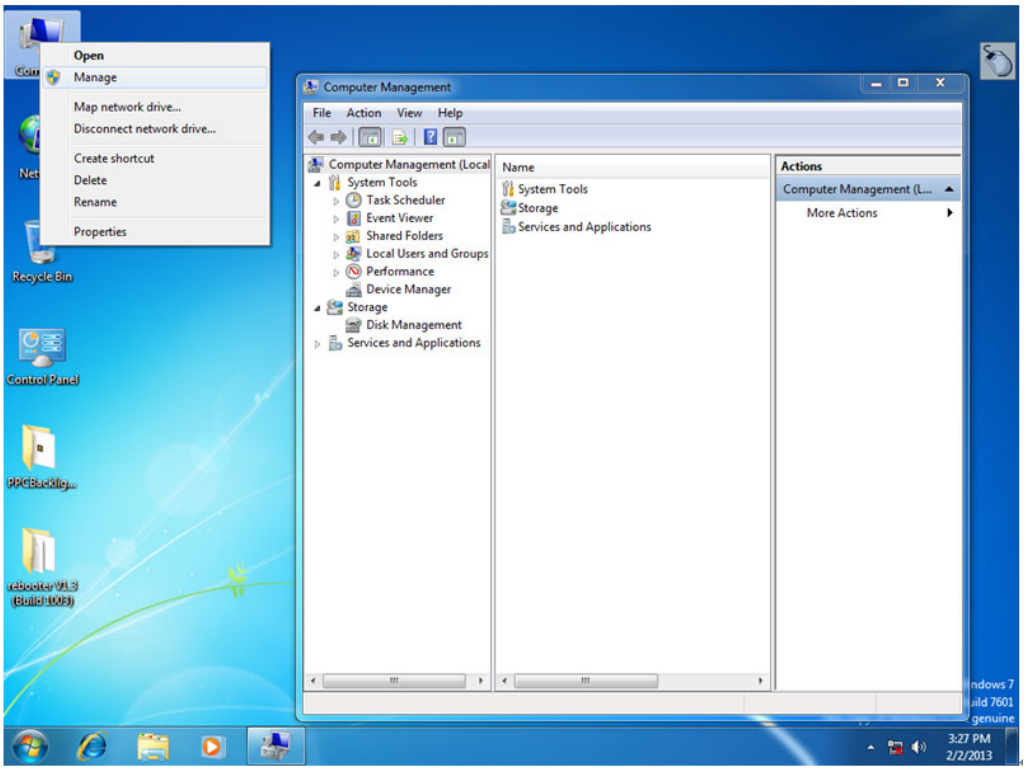
1. Select “ACPI Settings” under “Advanced”.



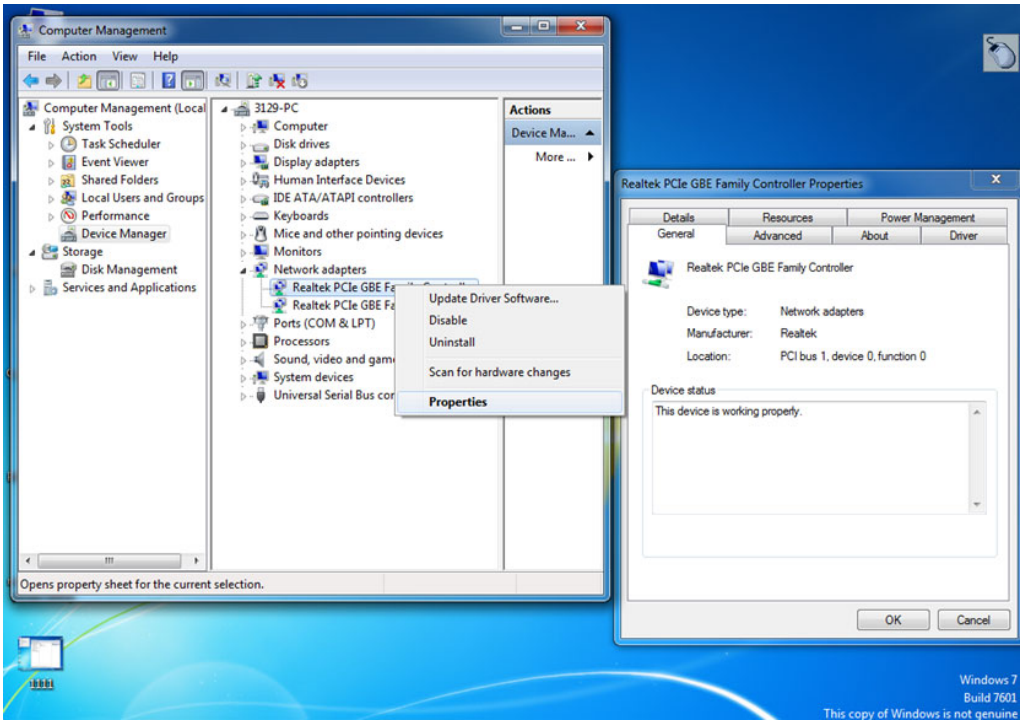
2. Set “Power Saving” as “Disabled”, and set “Power On by PCIE Wake#” as “Enabled”.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
ACPI Settings
ACPI Sleep State [S1 (CPU Stop Clock)]
Restore AC Power Loss [Power Off]
Power Saving [Disabled]
Power On by RTC Alarm [Disabled]
Power On by PCIE Wake# [Enabled]
Power On by RI# [Disabled]
Enable and Disable PCI Express Wake# event.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

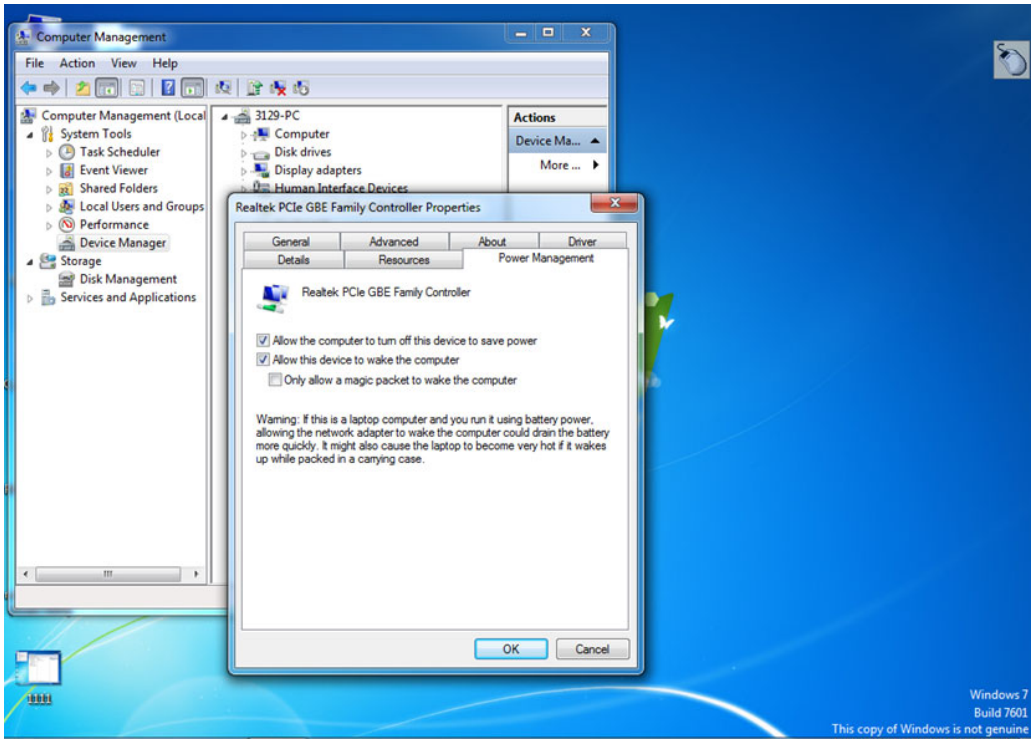
3. Then save the configuration and exit the OS.
4. Right click “Computer” and click “Manage”, then open “Computer Management”.



5. Click “Network adapters” in “Device Manage”, then right click and select the needed LAN port, then select “Properties” and open “Realtek PCIe GBE Family Controller Properties”.



6. Select “Realtek PCIe GBE Family Controller Properties” under “Power Management”, and check “Allow this device to wake the computer”.



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